

Appendix B

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Environmental Health Assessment
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October 20, 2000

The Honorable Barbara Dortch-Okara
Chief Justice for Administration and Management
Administration Office of the Trial Court
2 Center Plaza, 5th floor
Boston, MA 02108

Dear Judge Dortch-Okara:

In December 1998, the Massachusetts Department of Public Health (MDPH), Bureau of Environmental Health Assessment (BEHA) issued a report detailing an indoor air quality assessment conducted at the First Barnstable District Court Route 6A, Barnstable Massachusetts. Of note was the condition of water-damaged books in the library, which were colonized by mold growth. As detailed in the assessment, the source of the moisture causing the mold colonization was theorized to be a vent located in the library storeroom (MDPH, 1998). This letter is an addendum to the 1998 Indoor Air Quality Assessment of the building.

During an unrelated speaking engagement for the Public Health Network at the Cape Cod Commission hearing room in this building on September 20, 2000, Michael Feeney, Chief of the Emergency Response/Indoor Air Quality (ER/IAQ) program, of our bureau, was informed by library staff that a number of remedial measures have been taken to restore the book collection, including the solicitation of bids for restoration. Control of humidity levels in the library however appears to be a continuing problem. Mr. Feeney took the opportunity to re-examine the vent system in the library in an attempt to confirm the source of moisture that is contributing to mold growth in the library book collection.

As indicated in the Cochrane Ventilation, Inc. report, one potential source for introducing moisture into the library is pooling condensation within the air handling unit (AHU) (CVI, 2000). While this may be contributing to increased relative humidity in the library, the previous BEHA assessment identified a vent located in the library book

storeroom as the most likely source of the moisture. The following conditions and/or historical reports appear to further implicate this vent as the most likely moisture source:

1. The mold contamination was reported by librarians to be the heaviest nearest the vent;
2. Librarians also reported the use of a dehumidifier in this area, which burnt out while used in this room from removing copious amounts of water from the air; and
3. Occupants of both the victim's assistance program and library report cold air penetrating from this area during the winter months.

These conditions may indicate that an uncontrolled source of outdoor air is penetrating through the vents into the library and book storeroom. A closer examination of the library's ventilation system revealed a passive exhaust vent system that was part of the design of the building's ventilation system in the lower levels. In order to confirm the function of this vent (see Picture 1), the cover was removed. Behind the vent is a series of cloth flaps (see Picture 2).

The design of these flaps serves several purposes. The ventilation system relies on positive pressure created by the (AHU) to force air out of the passive vent in the library/book storeroom wall (see Figure 1). As the AHU operates, air pressure increases as additional fresh air is introduced into the library (called positive pressure). As positive pressure increases, air is forced out of the main room of the library, through the wall vent of the book storeroom wall, and out the passive vent. The vent is designed to allow for the cloth flaps to open (see Picture 3) and slowly release air by positive pressure. The design of these exhaust vents requires that the library doors remain closed to the extent practical in order to maintain positive pressure. With hallway doors open, library air would be forced into hallways instead of out through the exhaust vent.

The problem with this system is that the vents are not airtight and can create backdrafting cold air, as noted by librarians. If cold air can backdraft, moisture can also penetrate into the book storeroom. Compounding the tendency of this vent to backdraft is its location several feet below ground level (see Picture 4). Even with adequate drainage, the walls and floor of the cement-lined pit where this vent exists will tend to retain moisture during periods of wet weather. The vent appears to be rusted along its top, which can indicate that rainwater is penetrating the frame. The presence of accumulated leaves on the floor of this pit promotes water damage and adds another potential source of microbial growth that may allow for penetration into the book storeroom.

Previous experience in examining this type of system confirms the likely backdrafting of cold air during winter months. Without a mechanical system, the vents may not function adequately to provide exhaust ventilation to remove moisture from the lower level. As mentioned earlier, in order to have these vents operate as designed, doors and windows must remain closed in the library equipped with these vents.

In order to avoid further damage to the book collection, a remedy to the moisture penetration needs to be implemented prior to any restoration. The most effective remedy is to replace the passive exhaust vent system with a mechanical system in both the library and victims aid office as referred to in our previous report (MDPH, 1998). The installation of a mechanical exhaust system in these areas would prevent water penetration through the passive vents and remove moisture introduced into the lower level by the normal operation of the air handling units.

We strongly suggest that these steps be seriously considered to prevent on-going damage to the book collection. Please feel free to contact us at (617) 624-5757 if you are in need of further information or technical assistance.

Respectfully,

Suzanne K. Condon, Assistant Commissioner

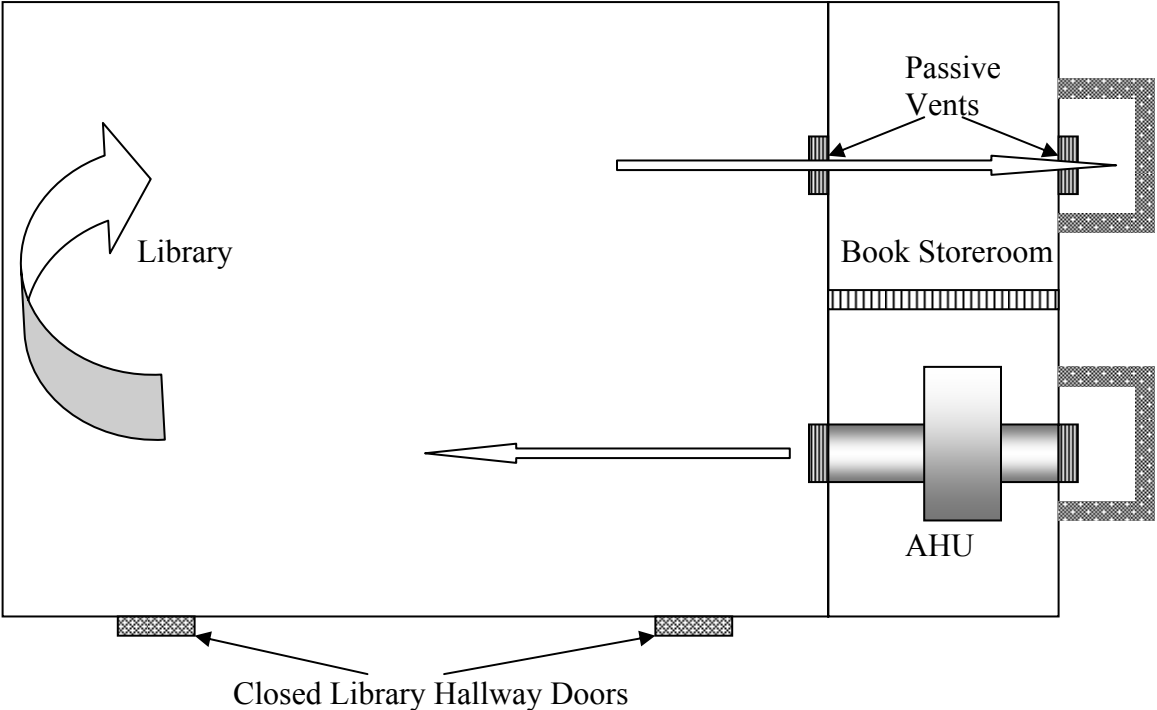
cc/ Mike Feeney, Chief, Emergency Response/Indoor Air Quality
Christopher McQuade, Administration Office of the Trial Court
Lynne G. Reed, Executive Director, Administrative Office of the Trial Court
Stephen J. Carroll, Director of Court Facilities
Joanna Rugnetta, Health and Safety Liaison
Honorable Samuel E. Zoll, Chief Justice, District Court Department
Honorable Joseph J. Reardon, First Justice, Barnstable First District Court
John Blaisdell, Facilities Director, Barnstable First District Court
Martha Elkins, Head Librarian, Barnstable First District Court
Senator Henri Rauschenbach
Representative Demetrius Atsalis
Representative Eric T. Turkington

References

CVI. 2000. First District Court Barnstable Law Library HVAC Hygiene Survey, June 29, 2000. Cochrane Ventilation, Inc., Wilmington, MA

MDPH. 1998. Indoor Air Quality Assessment Barnstable First District Court, Route 6A, Barnstable, MA, December 1998. Massachusetts Department of Public Health, Bureau of Environmental Health Assessment, Boston, MA.

Figure 1 **Configuration of Library Ventilation System using Positive Pressure to Force Air from the Library out the Passive Vent System**

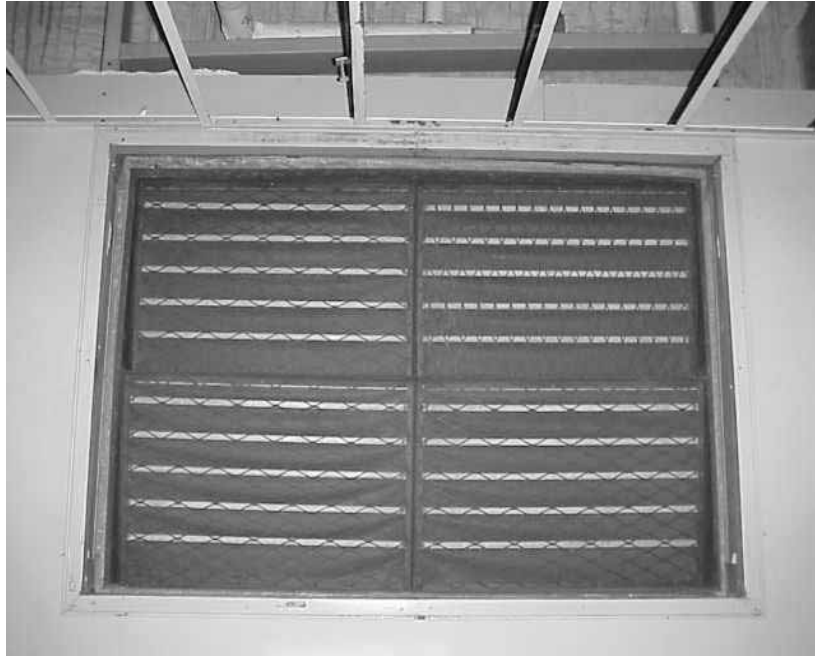


Picture 1



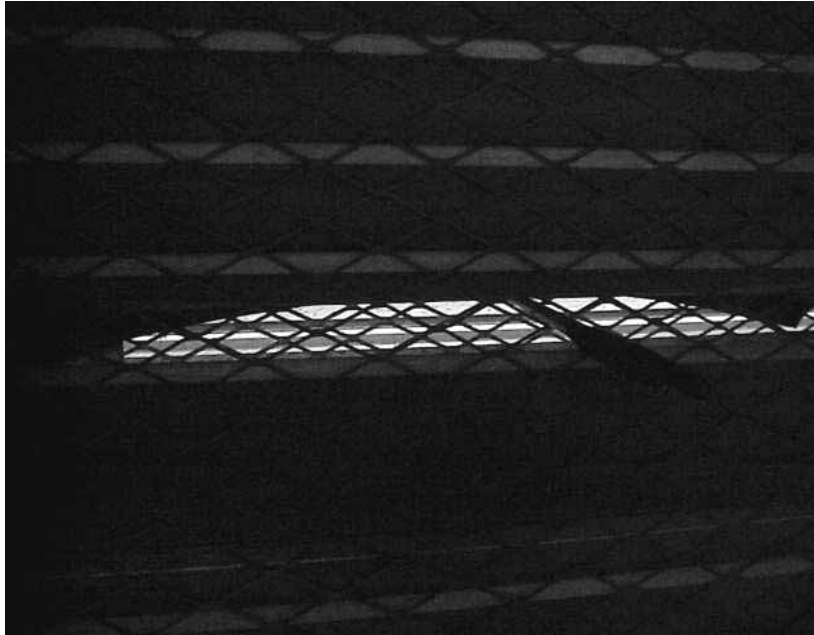
Passive Vent in Book Storeroom

Picture 2



Cloth Flaps of Passive Vent

Picture 3



Vent With Cloth Flap Propped Open, Revealing Outdoor Light

Picture 4



Floor Of Pit With Exterior Of Passive Vent, Note Wet Leaves On Floor Of Pit